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THOS. H. McCOLLIN, Managing Editor.
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SALUTATORY.

WITH the present number we commence the twelfth volume of THE AMERICAN JOURNAL OF PHOTOGRAPHY, and we come before our readers and subscribers, according to promise, in a new dress and improved shape, not the least of which is the larger and plainer type, heavier paper, and wider margin,—to say nothing of the increased number of pages. Commencing with this issue, we also present to our readers translations from our French, Italian, and Swiss exchanges, in addition to the latest announcements in our British and German contemporaries. This feature we expect to maintain throughout the year, and thus place before our readers specimen papers covering the various schools of photographic thought and deductions of our foreign brethren. At the same time, the photographic field of our own broad country will not be neglected, thus giving our professional as well as amateur readers an opportunity to keep fully abreast of the times. We trust that the new year, upon whose threshold we now stand, will prove a successful one for the professional photographer, and that it may be fraught with even greater triumphs of photography than the past one has been. What it will bring forth no one can tell. Who knows? perhaps before the year is out the photographic color problem may be solved. Time alone will tell.

Now a word for ourselves. We will make no further promises, except that we shall try, if possible, to improve upon the past, and maintain the position of THE AMERICAN JOURNAL OF PHOTOGRAPHY where it stands,—viz., second to none in the field of photographic literature in America.

POSING HANDS.

BY XANTHUS SMITH.

I HAVE often been tempted to offer some remarks about the best management of hands in posing sitters for their portraits; but the subject is rather a difficult one, and likely to prove of little interest, and perhaps less practical value.

We so rarely see well-formed hands, and they necessarily obtrude themselves in such exaggerated proportions in photographs, that it might perhaps be better to drop the subject as one of which the less is said the better, were it not that a well-formed hand on a man, or a beautiful hand on a woman, is justly one of the most highly prized perfections in nature.

We see numerous examples in sculpture of beautiful renderings of this admirable member of the human frame; and many an enthusiastic student is sorely damped, when in his first efforts with crayon to portray the complicated curves and flowing lines of a hand, he finds himself hopelessly lost in its varied intricacies.

Nothing can be more stiff than an ill-posed hand. Indeed, the amount of intellect and cultivation of an individual can quickly be read by a glance at the hands. They are, to a considerable extent, an index of character.

On account of the unavoidable circumstance that lenses magnify objects very much as they approach, the management of hands in photographic portraits is a matter of the utmost difficulty. In order to counteract this natural and incurable obstacle, it is always necessary to pose the hands of a sitter as closely as possible to the person, and consequently any look of easy grace which would be desirable is merged into stiffness and constraint.

The mode followed by the portrait painters of the past of regularly posing the hands, ran into certain conventionalities, which became tiresome in some instances. We are all familiar with the plan of having one hand on a book, which rests on the knee, while the other hangs over the edge of a table, and with the grasping the end of the arm of a chair with one, the other

holding a letter or packet of papers, and many other such nice artistic arrangements which have become ignored by many of the modern painters as not sufficiently naturalistic. We sometimes see, however, with the present disregard of the usual proprieties of art, a running into a commonplaceness which almost amounts to vulgarity. It is common enough now, even in portraits painted for big prices by artists who are conspicuously before the public, to see hands placed in very awkward positions, displaying broadly any want of refinement which may be in the sitter, and, perhaps after all, in some instances it is as well, as it only the better portrays the nature of the animal. An illustration comes to my mind which, though it relates to the posing of feet and not of hands, conveys the idea. My father was once painting a full-length portrait of William Sefton, the actor. He placed himself with the toe of the advanced foot turned in. Father suggested that it would be better if he placed it out somewhat, and his brother, John Sefton, who was present, said, "Yes, William, I have often spoken to you about that; I don't like it,"—and the toes remained turned in, and were so painted. In such cases we have conveyed an individuality of character, which may be worth a good deal. Before leaving the Seftons, I must remark that it was particularly inappropriate for William to be rendered with his toes turned in, because he was aspiring to fame in high tragedy, while in the case of his brother John, who was eminent in low comedy, such an awkward pose might have passed as in keeping with his parts at least. Either owing to a desire to avoid the trouble of suitably posing and painting both hands, or not liking the effect of spottiness of the two additional points of high light warring with the face, it is surprising to see how many of the eminent portrait painters managed to dispose of one hand in some ingenious way so as to get rid of it, occasionally boldly extending one arm, thus putting the hand entirely beyond the canvas, but more generally using drapery or parts of the apparel as a means of concealment. A frequent mode was to have one hand tucked beneath a partially unbuttoned coat; and during the period when the Spanish cloak was in fashion that garment found a ready means of hiding one hand at least.

Vandyke and Sir Thomas Lawrence shirked least of all the portrait painters, perhaps, these difficult accompaniments of a half-length portrait. They both introduced the hands boldly and frequently in their works. Vandyke, who had made a complete mastery of this difficult member, was even accused of a desire to display his skill in painting the human hand, on account of the frequent and conspicuous manner in which he portrayed the hands. But I think it would be difficult to find finer examples than may be seen in the works of Lawrence of admirable management of the hands. His disposition of them is nearly always so easy and in every way appropriate, that while they add greatly to the completeness and interest, they are not open to the objection of an uncalled-for display, nor do they detract from the interest which should centre on the head and face. Lawrence overcomes nicely the difficulty of two spots, equally claiming the attention, by placing one hand so disposed that it is much less conspicuous than the other, and sometimes he throws one hand entirely into shadow. This latter mode is one occasionally taken advantage of with good effect by photographers. When a head, for instance, is posed leaning upon one hand, the effect is much better if the hand be against the dark side of the face and thrown into shadow by the head; and when hands are not placed close together, so as to make a group in themselves, it would, I think, always be better to subdue one of them somewhat by shadow. When it is entirely appropriate, it is a great help to have the hands posed near or close together, and doing something. A hand entirely unoccupied should be elegantly posed, and if it does not happen to be a remarkably graceful and well-formed hand, the attention is apt to be drawn to it when it is better that it should not be; and even in the case of the elegantly formed hand, when it is so placed as to display it to its best advantage, the work may be open to the accusation of their being an appearance of affectation.

Portrait painters have one great advantage over photographers, in that they do not necessarily have to paint from the hands of the individual whose face they are representing. It frequently happens that the sittings necessary for the head alone more than exhaust the time and patience of those who are having their

portraits painted, and they gladly enough relegate the work of hand-posing to models regularly hired for that purpose, or to some friend of the artist's whose time and patience are abundant; but in working with the camera no such tricks of art are available, and if a sitter's hands are shown at all they must be his or her own, and be they good or bad, the best must be made of them that can.

As we have in the hand a repetition of the same form several times in the fingers, we must endeavor to vary them somewhat. When the fingers are extended straight out and held close together, the effect is stiff; and if they be kept straight and spread equally, the result is a sprawled, awkward look. When the hand is open, three fingers pose together better than two, and some of the fingers should be drawn up, but not all equally. A completely doubled-up hand is not good,—it is too like a fist; but a pose in the position of holding a pen or pencil, as when writing or drawing, is one which looks well from many points of view. A very bad arrangement of the hand is when it is held flat and the fingers doubled up to the second joint; the squareness of the form and the impression of the ends of the fingers being cut off are very unpleasant. Again, the hand very much doubled up, but the index finger fully extended, is an arrangement which looks exceedingly awkward from several points of view.

One sees at the best photographic galleries a great many examples of excellent posing of hands in the carefully arranged half- and full-length portraits, every art being used to secure the most graceful and artistic arrangement; and it will be observed, in looking at such work, that it is a great help if the hands can be holding something, or at least one hand a glove, a fan, or some portion of the apparel with ladies, and with men a pamphlet, papers, glasses, or any appropriate object that may be at hand. Both hands hanging down by the sides never make a good pose. There are some arrangements of clasped in front which do very well, but unless the fingers be carefully arranged they may be very peculiar and awkward.

It is interesting in looking at photographs of groups, notably those of athletic clubs and college classes, where the whole atten-

tion has been necessarily absorbed in getting the sitters well-grouped, time not being allowed for the careful posing of the hands, to see how the character is expressed in the natural unthought of arrangement of hands. The sum of ease and grace is always in favor of the groups of older and more intellectually trained persons, and it will be generally noticed that in groups composed of a considerable number of ladies there is remarkably little display of the hands. Owing, probably, to the fear that the hands will be exaggerated in size, and to nervousness about their appearance, it is surprising to see how many artifices are used to tuck them out of sight.

We think that we may safely say, in conclusion, that some time spent by beginners, and by those workers whose attention has not been especially called to the subject, in observing carefully the different arrangements or dispositions of hands, both in nature and as portrayed in the photographic and fine arts, will be bestowed to advantage.

STEREOSCOPIC TRANSPARENCIES.

BY ELLERSLIE WALLACE.

NOT a very long time has elapsed since we gave our readers a series of papers on stereoscopic photography in general, and expressed ourselves as very glad that there was a return of interest being manifested in that direction.

We wish to say a few words here concerning a most beautiful application of stereoscopic photography that is somewhat less common at the present day than it was in former times,—we mean the glass stereoscopic transparent positive. This exquisite effort of the photographic art is very well suited to such landscapes as will be made in the present winter weather. All kinds of views, including snow or ice, or both, are the *subjects par excellence* for the stereoscopic transparency. A print on paper from such a landscape negative, no matter how well made, will never equal the glass positive, which often elicits cries of delight from people who will say: "It looks like ice itself."

Now for a brief glance at the methods of making them. As in lantern-slide making, there are the two ways,—by artificial light in the printing frame, and by daylight in the camera. If contact printing in the frame be determined upon, the stereoscopic negative will have to be cut, and the two halves transposed, if the printing is to be easily and expeditiously done. It is possible, however, to avoid cutting the negative. A special printing frame, thrice the length of the negative, is made of wood, with a solid bottom, containing a rectangular aperture in the middle. The frame has also a solid back, with a spring which shuts forcibly down on the sensitive plate as it lies over the negative, and keeps things in place. The left side of the plate is exposed over the right side of the negative, and the frame then carried to the dark room, where, after opening the back door, the right side of the plate is transposed so as to cover the left side of the negative. The exposure is then repeated. This is at best a makeshift way of working. If the negative be too valuable a one to risk cutting, it might be worth while to reproduce it on glass by the usual method, and then cut the negatives so obtained.

If camera printing be preferred to either of these methods, proceed as follows: Arrange two cameras of suitable size on a board just as for lantern-slide making. See that the central dividing-boards, or septa (to use the correct term), are in good order, and permit no stray light to pass from one section of the camera to the other. Having arranged the negative securely in place in the rear camera, with its film side *away* from the lenses, remove the front panel of the same, so as to afford the lenses of the working or front camera an unobstructed field. See that the space between the two cameras is protected against light by a dark cloth or other means. Now remove the stops from the twin lenses on the working camera, and focus carefully, afterward inserting a stop in each suitable for the definition and exposure required. It is highly important to observe, in this connection, that the stereoscopic negative must be copied with a pair of lenses in order to produce a stereoscopic transparency. If copied with a single lens the characteristic relief of the stereoscope would be entirely absent. Transparencies made with the pair of lenses

as described are complete when finished, requiring no cutting and transposing of the sides.

The photographic operations are all carried out as usual, and we need not go over the beaten track of instructions in transparency making, further than to say that stereoscopic work of this kind will bear more development and heavier toning than lantern slides.

The question of mounting the slide when finished requires some attention. The neatest way is to mount it together with a piece of very finely ground glass, binding the two with a narrow paper binder like ordinary lantern slides. The camera-made transparency will be mounted with its film side turned in towards the ground-glass backing. It is for this reason that the negative is set in the camera with its film side away from the lenses.

Perhaps the best means of exhibiting stereoscopic transparencies is to place them in one of the old-fashioned revolving stereoscopes. These are arranged to hold a large number, and as each in its turn is brought up before the eye-glasses, one piece of ground (or opal) glass at the rear will do for all, and thus save the labor of mounting.

Let us say, in conclusion, that we know of no more beautiful means of displaying the efforts that the progressive photographer may have made. We have ere now urged the claims of stereoscopic photography in general.

We have been requested to notice the following ; it explains itself, viz.:

“THE DICTIONARY OF PHOTOGRAPHY.”

SIR :—I have not for one moment intended to claim priority with regard to the table of angle of view, as might be inferred from the Rev. Dr. Woodman’s letter in your issue of last week, page 322 ; the said rule and table were taken from my note-book, and, had I known the author, I should have been only too pleased, as you suggest, to have acknowledged the same, but the table was copied by me first in 1886 from source which I cannot now trace. Dr. Woodman is well known to me from his clear notes on optical matters, and I gladly give to him the honor, and will note for correction if another edition be called for.

Yours truly,

London, November 8th, 1890.

E. J. WALL.

OF RAPIDITY IN PHOTOGRAPHY.¹

BY E. DEMOLE.

Photographically, the adjective "rapid" is employed in various senses:

(1) It is said that an objective is rapid if—thanks to the combination or the structure of the lenses—the rays of light traverse them with as little loss of time as possible.

(2) The property "rapid" is given to a shutter if its movement is only a fraction of a second.²

(3) A plate is called "rapid" if, by nature of the emulsion with which it is coated, the exposure can be made in a very short time.

(4) Finally, the word "rapid" is applied to the reducing mediums which have the property of developing the hidden image in a short space of time, in addition to bringing out all the details where the exposure was exceedingly short.

In good language it would be better to reverse the adjective "rapid," and apply it to the bodies which are displaced, and not to those which are immovable. For instance, we call the objective "rapid"; it is not any part of the apparatus which is "rapid," or to be displaced, but the luminous rays, and the less they are obstructed in their passage the more the apparatus is qualified as "rapid."

Concerning the shutter, however, here really a movement is executed by the apparatus itself,—a movement which can be classified according to the time it lasts.

In a sensitive plate, exposed to the light, we will assume to a certainty that there is a movement, because the chemical or physical nature of the bromide of silver is changed. The word "sensitive" seems in this case to be preferable to that of "rapid." In the chemical action produced by the reduction there is also a movement, which operates more or less completely.

¹ Translated from the *Revue Suisse* for the AMERICAN JOURNAL OF PHOTOGRAPHY.

² Our Switzer *Studiosis Photographique* here takes umbrage at the word shutter. *Otturatore* fr. otturatore, Italian; shutter, English; *Verschluss*, German. Why thus? It certainly is not a good expression, because you have to open before you shut it.

In the production of a negative there are four movements, of various degrees of rapidity: The movement of the luminous rays, which are regulated in various degrees by the objective; the movement of the shutter, which regulates the time of exposure; the movement of the molecules of the bromide of silver, which transforms into a photo-bromide; and, finally, the movement inaugurated by the reducing medium (developer), which acts with more or less rapidity, and perfects the photographic action.

If we consider things well, we find that, up to the present time, all of the progress accomplished in the production of the photographic negative consists entirely in the regulation of these four movements and their increase of rapidity. There is hardly any doubt that this is not yet the proper way to work [that there will be still greater improvements in the future—ED.]. Shall we perfect our objectives, rendering them still more luminous? Shall we make the apparatus which gives access to the light, to acquire a still greater rapidity of displacement? Shall we compound reducers, to push the action of development to extreme limits,—viz., by augmenting the sensibility of our plates? No, positively no. To the contrary, we had better look for a medium sensibility, which alone brings forth a good emulsion.

It will be a great day for the manufacturers of dry plates when they will be relieved of the nightmare of rapidity, which causes them so much embarrassment, is the cause of so many failures, and results in so many reproaches. Do not let us be mistaken. The shortest exposure, even if it were only one-thousandth of a second, with a plate of middling rapidity, is theoretically sufficient, provided that we know how to manage the development.

The means which we have to work with are surely not yet as perfect as we might desire, and the sooner we improve them the better. I am sure we will succeed. Eikonogen and hydroquinone are an example that improvement is possible. We have only to pursue our researches.

St. Peter: "Who are you?" New arrival: "An amateur photographer." St. Peter: "You will find the dark room down below."

THE USE OF META BI-SULPHITE OF POTASSA AS A PRESERVATIVE OF EIKONOGEN.¹

BY GEORGES ROBERT.

THE introduction of eikonogen in photography has not yet ceased to give cause for almost numberless controversies. Its partisans boast of the rapidity as a developer, the softness of the plates which it produces, and the valuable property of bringing out the finest details in the shadows, to which they add the claim that in dull weather, when hydrochinone would be impotent to produce the slightest image, a perfect negative can be obtained by the use of eikonogen.

The opposers of eikonogen, on the contrary, ascribe to it most serious shortcomings; they declare that it produces only feeble negatives; further, they state that not only are the solutions perishable, but that even the crystals of eikonogen sooner or later deteriorate and become black.

This great defect, which, however, cannot be disputed, was the means of driving to despair the discoverer of eikonogen, the famous Dr. Andressen. Doubtless he labored for a long time to render his product unalterable; unfortunately with all his experimenting he could not triumph over its alterability.

The fact is, the first eikonogen was presented to us in the form of a powder of white salt; these powders soon became brown, then black. Dr. Andressen then sent out his product in opaque, yellowish crystals, of very ugly appearance, also alterable. Finally we received the eikonogen in small crystallized laminae, of a pale yellow, looking better; but alas! they became black equally as soon as their predecessors.

We learn to-day by a circular from Dr. Krugener, of Brockenheim, concessioner of Dr. Andressen, that the means with which the preservation of eikonogen can be accomplished have been recently discovered, but are kept a secret. They content them-

¹ Translated from *Le Progrès Photographique* for the AMERICAN JOURNAL OF PHOTOGRAPHY.

selves to state that but a small quantity of the preservative substance is added to the eikonogen, and that this product in the future shall be made in the form of a white powder which will keep indefinitely.

It is difficult to understand the motive which caused Dr. Andressen to make a mystery of this preservative substance. We have only to say that this inexplicable mystery will soon be nothing but a fool's secret. It is now over two months since M. Petry of Bar-sur-Seine communicated to us the fact that eikonogen can be preserved from all changes, simply by mixing it after it has been pulverized with a small quantity of meta bi-sulphite of potassium.

We were able to detect the presence of this salt in the eikonogen powder as now put on the market,—the fourth metamorphosis which we received from Germany.

We do not fail to observe that the addition of the meta bi-sulphite must be a very small one. Too much of this acid salt would greatly diminish the powerful action of the eikonogen.

PHOTOGRAPHIC JURISPRUDENCE IN GERMANY.¹

THE RIGHT OF A PHOTOGRAPHER TO EXHIBIT SPECIMENS OF HIS SKILL.

BY JULIUS F. SACHSE.

THE question as to the ownership of the photographic negative crops out from time to time in Europe as well as our own country. It was but a few months ago (Vol. XI., p. 209) when we chronicled a decision of the Supreme Court of Minnesota that the use of the photographic negative was the sole property of the sitter. Since that time the same question crops out periodically in various quarters of the globe. The latest case in point was brought out at the meeting of the practical photographers in Berlin, November 19, 1890, when a letter was received and read from a photographer in Hamburg relative to the right of a photographer to exhibit a portrait without having

¹ A free translation from *Photographisches Wochenblatt*, No. 49.

first obtained the permission of the sitter, and how far such action conflicts with the Imperial Code of 1876.

This communication led to considerable discussion among the members present. The Hamburg professional states, viz.: "I exhibited the portrait of a young lady whom I had photographed without first obtaining her permission to exhibit a duplicate. Shortly afterwards I received a communication from an advocate to remove the picture. This I did at once. I then received another communication demanding reimbursement of the expenses incurred by the young lady (18m. 25 pf., about \$5). The latter I refused to comply with.

"After a lapse of five months I am suddenly summoned to defend a suit for 2,000 marks damages brought by the lady, the court being further petitioned to grant costs and expense of suit in addition to judgment in above amount, and to make an order on defendant to deliver all photographs which have been on exhibition to the plaintiff in the case.

"Have I any chance to win in this suit? and how does my case stand?

"Is it possible that any one can be convicted for exhibiting (incidentally mentioned) an especially successful specimen of photographic portraiture? According to my views as a layman, I did not exhibit the lady, but merely my proficiency as a professional photographer."

Herr E. Kiewning stated that he had a somewhat similar experience in 1876, when he exhibited the portrait of a lady in his show-case, and refused the request to remove it. But when this request was followed by a notice from an advocate that he was liable to a fine of fifty marks, he at once complied, and that ended the matter.

Herr Hugo Danz stated that he frequently exhibited portraits without first obtaining permission. When objection was made he simply removed the pictures. He would never let a case of this kind come to a suit. In his opinion no photographer has the right promiscuously to exhibit his portraits.

Herr Albert Schwartz remarked that in the law in question no special penalty was mentioned, and in his opinion the case fell when the request to remove was complied with.

Herr J. C. Schaarwächter was convinced that under the protective law of January 9, 1876, although not containing a direct interdict against the exposition of portraits in a show-case, yet the right of duplication of photographic portraits, which is therein assured to the original, would be emperiled or violated by such exposure.

Herr Danz agreed with the opinion of Herr Schwartz that a removal should end the matter.

Herr Gaedicke, to the contrary, held that wherever an unauthorized exhibition of portraits was made the law presaged that from that moment the penalty was incurred.

Herr Brück called attention to the fact that under the law all claims for injury or indemnification are debarred by the statute of limitation if not brought within three months, and as four months had elapsed in the case in point, the defendant photographer need have no fears.

A resolution was then passed by the Verein that in the sense of the meeting the Hamburg photographer was secure in his rights, and need give himself no fears.

The law in question is Section 7 of the Imperial Code of January, 1876, and relates to the protection (copyright?) of photographs, and against the duplication or copies of the same. It further vests all rights of ownership in a likeness or portrait photographically produced in the original sitter, without previous contract.

In Volume II., *Reichsgerichtliche Entscheidungen*, p. 246 (Court Reports), a case is cited in which a photographer printed a duplicate of the portrait ordered, and exhibited it in his show-case as a specimen of his handiwork and proficiency. Here the Imperial Court assumed a violation of the rights vested in the original.

In the meantime, it is to be judged from the decision that the law also holds that exposing or exhibiting the portrait in the business place of the artist is illegal. On these grounds the question presents itself, is the public exposition of a photograph on the part of the photographer, either within his business place or outside of the same, with the intention of advertising his skill and proficiency, an encroachment upon the rights of the sitter or person who originally ordered the portrait?

The judges decided that such was the case.

ELECTRICITY IN ALUMINUM-MAKING.

THERE is probably no other metal the usefulness of which is so extensive as aluminum, and yet its practical utility has been successfully demonstrated only very recently. As a matter of fact, the metal was known long ago, but, although its advantages have been realized, the great cost of its production has always prevented its coming into general use. Electricity, has, however, come to the rescue in this, as in so many other departments of industry, and by its agency aluminum is now produced at such a low cost that it bids fair to supersede iron and steel in many instances.

Aluminum exists in nature in the form of an oxide so refractory in its character as to make reduction in any ordinary furnace impossible, and the only means which has been found available for its reduction on a commercial scale is electrolysis. The passage of the electric current has the effect of separating the pure metal from its surrounding impurities, and the economy of the process, compared with the methods heretofore employed, is remarkable.

The remarkable lightness of aluminum, its exquisite appearance, its strength, hardness, ductility, malleability, its non-liability to oxidize or blacken, and the extreme facility with which it can be worked, make this announcement of especial interest to photographers. In the application of aluminum, besides lightening lens mounts and flanges, an appreciable amount of weight could be saved by employing it for the fitting of cameras and dark slides, and for other parts of the outfit usually made of metal.

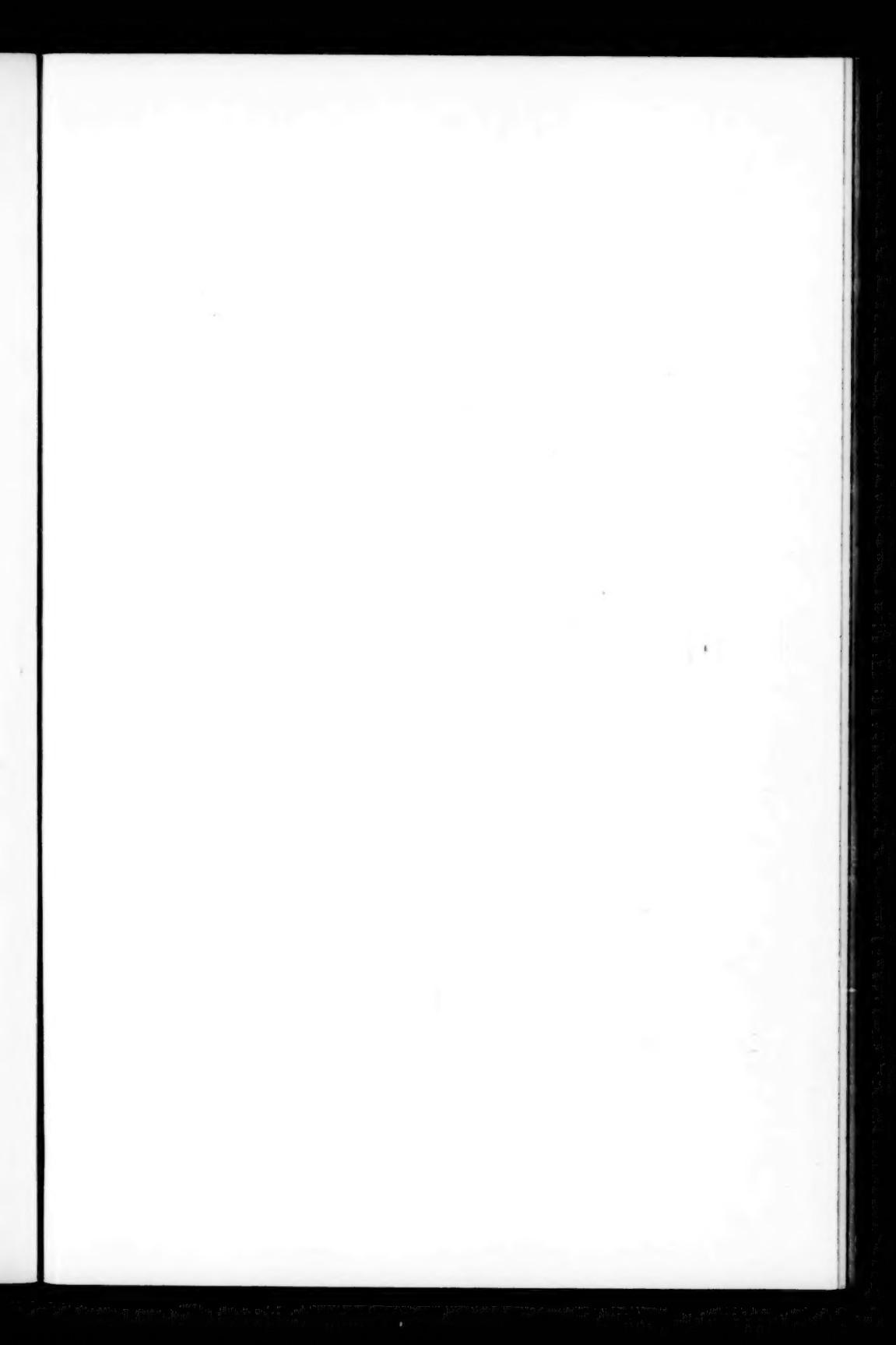
In connection with this subject of cheap aluminum, while the daily press every now and then announces newly discovered processes by which the metal can be produced in enormous quantities at a few cents per pound, the following paragraph clipped from an Ohio paper will prove of interest: "This bit of aluminum," said Colonel Weir, of Cincinnati, the other day, pointing to a small bit of the metal on his desk, "cost me just \$10,000. Yes, that's rather dear for aluminum, I admit, but still," with a smile, "we must have it, you know. I became interested in a man who had a 'perfect process' for making aluminum. A company was organized and the stock subscribed. The process looked very well on paper, but this is all I have to show what became of \$10,000, the amount of my stock. I'm rather curious to see how successful these new processes of making aluminum will be."

THE PROTECTIVE MIMICRY OF INSECTS.

IN a previous paper (Vol. XI., p. 259) we showed the application of the camera with its sensitive dry-plate to the study of the larva of lepidopterous insects, illustrating the paper with a specimen print of this extremely difficult class of subjects, with all the delicacy and detail of the original. In the present issue we follow up the application of photography to the study of the natural sciences, and show photographically an example of the protective mimicry of insect life, a subject which has of late attracted much attention in scientific circles, as this mimicry in the insect creation is not merely an occasional or exceptional phenomenon, but an integral part of the economy of nature. It becomes more wonderful as we continue to study, investigate, and compare the results achieved by the different naturalists and travelers. A late writer on the subject¹ states that "Carlyle, in his blackest visions of 'shams and humbugs' among human kind, never saw anything so finished in hypocrisy as the naturalist now finds in every tropical forest. There are to be seen creatures, not singly, but in tens of thousands, whose very appearance, down to the minutest spot and wrinkle, is an affront to truth; whose every attitude is a pose for a purpose, and whose whole life is a sustained lie. Before these masterpieces of deception the most ingenious of human impositions are vulgar and transparent. Fraud is not only the great rule of life in a tropical forest, but the one condition of it."

"Although the extraordinary phenomena of mimicry are now pretty generally known to science, few workers have yet had the opportunity of studying them in nature. But no study in natural history depends more upon observation in the field. The great majority of mimetic insects are imitations of objects in the environment which cannot be brought into comparison with them in the drawers of a museum." It is just here where photography again asserts its superiority. Drawings and descriptions, at the best, are always unsatisfactory, as they are more or less imperfect, and the more realistic they appear, the more they raise the question of the idealism or imaginative genius of the artist; the more wonderful or accurate they are, the less are we inclined to receive them as the truth. With photography the case is different. Under normal conditions the modern camera cannot help but reproduce these mimic wonders with a fidelity true to nature, show-

¹ Drummond, 1889.



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THE PROTECTIVE MIMICRY OF INSECTS.
KALLIMA PARALEKTA (DEAD-LEAF BUTTERFLY).

NEGATIVE (UNTOUCHED) BY JULIUS F. SACHSE,
DECEMBER, 1890.

IVES PROCESS. CROSSCUP & WEST ENGRAVING CO.,
911 FILBERT STREET, PHILADELPHIA.

ing the inconspicuous animal in its natural environment,—a result not to be achieved by any other branch of art. For our illustration we have selected a specimen of the *Kallima paralekta*, a butterfly of the same family group as our purple emperor *Apatura iris* (Linn.), and is about the same size, or larger. Wallace, the well-known naturalist, who, if we mistake not, was the first to describe this butterfly, thus mentions it in his work on the Malay Archipelago.² “ Its upper surface is of a rich purple, variously tinged with ash color, and across the fore wings there is a broad bar of deep orange, so that when on the wing it is very conspicuous. This species was not uncommon in dry woods and thickets, and I often endeavored to capture it without success, for after flying a short distance it would enter a bush among dry or dead leaves, and however carefully I crept up to the spot, I could never discover it till it would suddenly start out again, and then disappear in a similar place. At length I was fortunate enough to see the exact spot where the butterfly settled, and, though I lost sight of it for some time, I at length discovered that it was close before my eyes, but that in its position of repose it so closely resembled a dead leaf attached to a twig as almost certainly to deceive the eye, even when gazing full upon it.”

As will be seen, the upper wing terminates in a fine point, just as the leaves of many tropical trees and shrubs are pointed, while the lower wings are lengthened out into a short, thick tail. Between these points runs a dark curved line exactly resembling the mid-rib of a leaf, and from which radiates on each side a few oblique marks which well imitate the lateral veins. As the insect settles upon a twig the tail of the hind wings forms a perfect stalk and touches the twig, while the insect is supported by the middle pair of legs. How close the resemblance is between this insect and the environment may be judged from the fact that when the specimen was set up as photographed it was even more difficult to discover the difference in nature than on the photograph or the reproduction here presented. The color of an ashy brown or reddish-brown closely imitated the color of the dead leaves, while patches and spots of small black dots, closely resembling the natural fungi on dead leaves, increased the deception.

We are indebted for the specimens here represented to Dr. Henry Skinner, Curator of the Entomological Section of the Philadelphia Academy of Natural Sciences.

The plates used in this study were Carbutt B 16, Seed 23, Cramer 35. The range of exposure was from one minute on Cramer 35 plate to four minutes on Carbutt B. Lense, Euryscope Rapid Rect.; smallest stop; light good. Developer, our Combined Orthochromatic, as per formula given in Vol. XI., p. 265. The Ives process reproduction was made from the Carbutt plate.

JULIUS F. SACHSE.

² London, 1869.

PHOTOGRAPHY AND SCIENCE-TEACHING.

BY WILLIAM M. DAVIS.

THERE are thousands of teachers in different parts of our country who would be glad to obtain, at a moderate cost or by exchange, a series of characteristic photographic views for class use. There are thousands of amateur photographers whose work is coming to be of professional excellence, but whose pleasure in the work fails of the highest mark for want of a definite and useful employment of their plates. Can there not be a joint committee from the teachers' associations and the amateur photographers' societies by which these disjointed thousands can be properly paired off?

A teacher in the interior tells his class in physical geography or geology something about the waves on the seashore and the work that they do. What a pretty illustration of this subject would be made by a series of views of one of one of our little sandy coves between rocky headlands on the New England coast: one view on a calm day in summer; another of the same place and from the same point on a stormy day in winter; a third, of a wave in its retreat; a fourth, taken a few seconds later, of the next wave in its rushing attack; a fifth, of a boulder where it lies in the autumn; a sixth, of the same boulder where it has been driven by the next spring. How gladly we should receive from the expert on the Bay of Fundy a set of views illustrating the different phases of the great tides on that coast, particularly if one should include the flight of the traditional pig before the advancing waters!

On the other hand, the teacher in New England wishes views of the Ohio at low water, and of the same place in flood, when the valley looks like an inland sea. There are undoubtedly many excellent plates of such views lying idle now,—wasted work for the want of proper application to their uses. One of the many cascades in New York in summer drought and winter rage; one of our northern lakes, idle under a warm sun and hard-worked when wearing its coat of ice; a thunder-storm in

its advance from the west and retreat to the east (whoever can secure such a prize well portrayed will do more than has yet been done)—all these and many other subjects would be highly valued in the school-room, for they show the life of the earth.

The Geological Society of America has a committee, whose chairman is Professor J. F. Kemp, of Ithaca, N. Y., and whose object is to secure photographs of geological subjects of uniform size for exhibition, exchange, and sale; lantern slides are to be made if desired. Much valuable material will be gained in this way, for many geological subjects afford excellent views in the camera. Something of the same kind might be arranged by the photographers and teachers. My own immediate interest lies in views of New England scenery, so strikingly characteristic in every way. I am informed that many amateur clubs exist in our cities, and among these there must certainly be many desirable views. How can I see these views, so as to make choice among them, and secure by purchase, exchange, or, I might say, even by donation, those that will best serve to illustrate my lectures on our local physical geography?

Harvard College, Cambridge, Mass.

[In connection with the above excellent paper from Professor W. M. Davis, we will say that we have on several occasions during the past year urged this matter upon our readers. Our negatives are too often neglected and forgotten. A careful perusal of Professor Davis's paper must convince almost any one of what good use may be made of our negatives, and the great amount of information which might be imparted to others by a systematic system of interchange throughout the various parts of our broad country.

The subject of geological photography has of late attracted much attention in England (we think through the efforts of the *Photographic News* of London), and has resulted in imparting much information and bringing together a number of valuable prints for study and comparison. For the past six months we have paid some attention to this line of study, and in the near future expect to print an illustrated paper on the subject.

We have always advocated a systematic and intelligent use of the camera in field work. It costs no more; and, if conscientiously done, the intelligent amateur will be surprised how soon photography in sport will lead to science in earnest.—J. F. S.]

MECHANICAL SHUTTERS.¹

BY I. GOLFARELLI.

IT is a common occurrence that we try to generalize the use of a new discovery, even in cases where we know beforehand that the attempt is useless. The same is true as to the application of many industrial apparatus, as well as in elementary matters and substances. The mania for novelty, the avidity for gaining wealth, the desire to observe the effects of the new appliances, and other similar causes, are the origin of all this craving. This is very well for such as are justified by the love for progress and its laws; but on the other hand it simply shows the futility of fickle humanity.

It cannot be denied that after the discovery of the rapid processes in photography, and especially when it penetrated or took hold of the public fancy, we reached a new epoch of enterprise. We allude here to the combination of gelatine with bromide of silver, which forms the medium upon which the latent image is formed. In consequence of the rapidity of this process, the attention of scientists was led to mechanical shutters, and much study has been bestowed upon them. The reason for this is that the hand cannot accomplish a movement quicker than one-fifth of a second, whereby there is great danger that the camera is shaken, which is almost always followed by repeated vibrations which spoil the image. To overcome this difficulty and attain a constant or steady velocity of exposure, which would reduce the time from one-fifth of a second to one one-hundredth, or even less, at once became the object of the mechanic and the votary of instantaneous photography. Both worked hard to construct an apparatus which would give satisfaction, and answer for the various requirements of the art in its multifarious ramifications.

The best way to reach a solution of the problem, and overcome the various difficulties, is rather by long practice than by theories promulgated from the sanctum.

¹ *Sugli Otturatori Meccanici.* Read before the Societa Fotografica Italiana. Translated for the AMERICAN JOURNAL OF PHOTOGRAPHY.

Londe, who showed great ability in his interesting pamphlet on instantaneous photography and the intricate mechanism of the instantaneous shutters, fell into the same error of theorizing and reasoning, and consequently arrived at conclusions devoid of value or common sense, which otherwise pervades his little work,—errors which are often made, even by the most enlightened and cultivated minds.

Londe's mistakes are when speaking of the best forms of shutters, their function, and method of determining their various velocities. For instance, in the chapter in which he speaks of the use of rapid shutters in time exposures, he mentions the actual desire to construct rapid shutters which permit exposures from one-fourth of a second to two seconds and over. He adds (without wishing to dispute the value of this application, I find that it is not necessary): I agree with those who think that a shutter does not give the same advantages in long [time—ED] exposures. Neither has it the same value, as in very short exposures, viz., in the so-called instantaneous; nor can I say whether the assertion is well founded that the shutter is without efficacy at the beginning and at the end of the exposure.

Before speaking upon this subject, I intend to make a thorough investigation with delicate instruments. I may, however, say that in a recent excursion to the mountains I used the shutter alternately with the cap. In comparing the negatives obtained with the common shutter with those produced with the cap, it appeared to me that the negatives made with the shutter showed a tendency to dullness, which I failed to perceive in the others. In the meantime, I must avow that I always used diaphragms of from 2-4 mm., whereby the exposures varied from 1-4 seconds, according to the light. Preoccupied with this phenomenon, I recalled to my mind the little which I had been able to gather from photographic literature about rapid shutters, and, reflecting upon the facts, I tried to find some reason for the above-mentioned results. In the rough study of this important matter new doubts were added to those I already felt. I think, therefore, that there is an opportunity for new and exhaustive experiments; also that these may result in one or two new types of

shutters, in which the various shortcomings found in those of the present day may be overcome, and new advantages attained.

Mr. Londe has made some experiments on the shape of the blades the shutters should have. But as to a rectilineal or circular movement, Londe has neither experimented nor published anything. This is especially true regarding shutters where the plates move in a contrary direction, such as the Thiery, Amey, Steinheil, Marcilly, etc., which open from the centre rather than the edge. True, Londe speaks of some experiments with a centre opening, but as he does not mention anything about the form of the shutter, nor of the condition in which it is placed, we cannot say if the result deserves credit. For the time being, I doubt his statement, as I have facts and authorities at my side which are in contrast to his opinion. I must also state that I was unable to see any lack of sharpness caused by the action of the shutter, and whilst I repeatedly found, by accurate experiments with different objections, that the oscillation according to the focus is almost nothing optically, in practice no visible effect can be seen.

For the purpose the better to calculate the exposure and lessen the time, I myself see the necessity of adopting shutters of the highest velocity. But even this advantage is reduced if the shutter is placed in the first nodal plane [nodal piano] of the objective, especially if we use a small diaphragm, in order to obtain very sharp negatives, and a wide field, in which case the exposure is again relatively lengthened.

Considering these facts, I cannot accept the assertion of Goudman, notwithstanding his skillfulness in instantaneous photography, that negatives obtained with central shutters are very bright in the centre and dark in the edges. This phenomena was no doubt observed by that able photographer and artist, but it must have been caused by the use of an objective for a field smaller than the plate, or perhaps it was caused by special aberrations of the objective.

The shutters with a wicket (*sportello*, a little door) [probably a dropshutter is here meant—ED.] of Guerry and of Audrea, although considered the least perfect, are under some conditions capable of excellent results. The same may be said of shutters

with double leaves if they are operated with a ratchet. In the meantime, I find that the chronometrical shutters of Bocca, Gilonna, etc., with a central and rapid action, are superior to all others.

Before concluding these remarks, I cannot help mentioning two facts in connection with these shutters: (1) Unless those with a ratchet action are worked with compressed air, the time of exposure is subject to great variations; (2) in time shutters the time of exposure is indicated to a fraction of a second on a dial, but this does not correspond with the true time, as I found by comparison at the *chronometrico corista* that the actual exposure was always greater than indicated, reaching even four times the length indicated,—and this without any visible fault in the normal functions, as they were obtained directly from the manufacturer.

The Compass in the Watch.—A correspondent of the London *Truth* sends the following: "A few days ago I was standing by an American gentleman, who is an enthusiastic amateur photographer, when I expressed a wish to know which point was the north. He at once pulled out his watch, looked at it, and pointed to the north. I asked him whether he had a compass attached to his watch. 'All watches,' he replied, 'are compasses.' Then he explained to me how this was. Point the hour hand to the sun, and the south is exactly half way between the hour and the figure XII on the watch. For instance, suppose that it is 4 o'clock. Point the hand indicating 4 to the sun, and II on the watch is exactly south. Suppose that it is 8 o'clock, point the hand indicating 8 to the sun, and the figure X on the watch is due south. My American friend was quite surprised that I did not know this. Thinking that very possibly I was ignorant of a thing that everyone else knew, and happening to meet Mr. Stanley, I asked that eminent traveler whether he was aware of this simple mode of discovering the points of the compass. He said that he had never heard of it. I presume therefore, that the world is in the same state of ignorance. Amalfie is proud of having been the home of the inventor of the compass. I do not know what town boasts of my American friend as a citizen."

AMATEUR EXPERIENCES.—THE OLD TEAMSTER.

BY J. FOCUS SNAPPSCHOTTE.

IT was on a bright warm day in the early fall, when the maples were just donning their autumn foliage of crimson and gold, that I was tramping along the Lancaster turnpike, about fifteen miles west of Philadelphia, with my pet Model outfit in hand, looking for a stray bit which should attract my fancy, or a shot at some bright-colored tree along the roadside. While enjoying the balmy air and mellow atmosphere, engrossed in my photographic study, my attention was attracted by the tinkle of a bell behind me, and on looking around I saw a wheelman, superbly mounted on an expert racer, spinning smoothly along the smooth white avenue; but what interested me mostly, attached to the handle of the machine, was a small camera. A few dozen rods ahead was one of those suburban towns with which the highway is dotted. Thinking that this might be the goal of the photo-cycler, I quickened my steps, and, to my joy, I saw the wheelman dismount in the near distance, brace his wheel, adjust his camera, and take a shot at one of the pretty cottages on the roadside. I caught up to him before he unlimbered again, and introduced myself as a fellow-amateur photographer, and a member of the local club of that vicinity. He greeted me courteously. While we were speaking, an old man, who was coming down the pike in a rickety old mill wagon, drawn by an ancient horse whose points painfully showed the lack of grain, stopped and seemed critically to examine the machine.

The cycler, noticing the curiosity of the stranger, politely invited him to get down and examine the wheel. It was with considerable difficulty that the old man got out of his wagon, and walked around the delicate machine. After a long study, he said: "Well, I do declare, what next? who'd a thought it? who'd ever a thought it when Sairey Jane and I was young, to see a man a comin' up the old pike a straddle of a wheel, with his feet on the hub a turnin' of it? who'd a believed it? And them spider-leg

spokes and 'Injey' rubber tires not any thicker as my thumb! Why, mister, when I was young like you'n's I uster team along the pike, and my wagon had tires a foot wide, and the spokes was thicker nor your arm. Well, well, I see you got a bell on that 'ere thing, too! Well, I druv six horses to my *Pitt team*, an' each horse had four bells on him, strui.g on a yoke,—that was twenty-four all told,—and they was all different, too! Queer! Well, things was different then. Mister, what's that thing up thar?" pointing to the camera. He was told that pictures could be taken in that little box, of anything, as you rode along. This was evidently the straw that broke the camel's back. The old man could believe anything, but he could not swallow that; so, with a look of surprise, he broke out with, "What, and ye mean to say ye can take pictures with that little box? Well, gents, I am an old man, plain and with but little school larnin', but I can't believe that; why, mister, Sairey Jane,—that's my wife,—and me, last Fourth of July, came down to the station to get our picters taken, an' his box what he aimed at Sairey Jane was nigh about a yard square, an' yet the picters he shot out weren't more than the size of a quarter! why, accordin' to that, yourn wouldn't be any bigger nor a pin's head." To humor the old man, the cybler asked him to stand at the horse's head, and he would show him what he could do. So the exposure was made, but the fact that the result was not forthcoming, as it had been on the Fourth of July tintype mill, only seemed to strengthen the old resident in his idea that the wheelman was a fraud, notwithstanding the promise to send a regular photograph of man, mare, and wagon in a few days by mail. With that the cybler commenced to oil his bearings preparatory to his homeward spin. The old man's curiosity once more got the better of him; so he ventured the question, "What's that you're doin'?" "Oiling the bearings." "Why, mister, that 'ere can don't hold more as a thimbleful of ile! I uster have a gallon of whale ile and tar swung to my back axle, —well, well, things have changed since then. Why, mister, I wonder what some of them old stage drivers would have said if one of them things had gone by when they were comin' along this stretch? They used to change relays at the Eagle, just

above here ; then they used to come lively over this level, but times has changed, mister ; these were all meadows and fields around here. None of these *picter-book* houses was around here then, I tell you. But that was afore these railroads was built. In them days the pike was lively, two rows of teams going each way, —to say nothing of the horsemen, droves, emigrants with their duds, and the stages ; but its all different now ; there is no more chance for the poor man." With this the old teamster crawled up on his wagon-seat, and, picking up his lines, said : "I am thankful to you, stranger, for showing me that new-fangled machine, but I reckon I had better start for home with my flour ; here I hev been talkin', and the old woman a waitin' for me ! she wants to bake, and Sairey Jane's temper hain't as good as it uster be, when I married her neither. You'd like to come and talk with me about old times ; well, I'll be glad to see ye, mister, any time,—you'll find me around the blacksmith shop up yonder any day ; I hain't a workin'. Good-bye." With this the old resident jerked the lines of the old mare, and slowly jogged down the pike.

The photo-cycler, after exchanging cards, bid me good-day, and mounting his wheel was quickly out of sight.

After picking up my outfit and starting up the old pike, I could not help contrasting in my mind the great difference between the present age and the days mentioned by our talkative resident and stranger. Still, this period had passed within the lifetime of the writer,—the galloping stage-coach, the Harrisburg coaches, the accommodation stage, the Pitt teams, the old Conestogas, the emigrants in their vans,—all of which used to make up an ever-changing kaleidoscope of life and activity ; all were gone, replaced for the time by the long and luxurious *limited* train of Pullman parlor and day coaches, drawn by swift and powerful locomotives ; then we have the electricity and the photography of the present day, but even these in the future may be supplanted,—who knows?—perhaps by some force of nature as yet unknown.

Our Frontispiece for this number is a print made by the Buffalo Dry Plate and Argentic Paper Co., on their enameled paper. The negatives are made by Edward T. Bradway, of Woodbury, N. J., and others.

PHOTOGRAPHY IN THE COLORS OF NATURE.

M^{R.} IVES' lecture on heliochromy was a scientific and popular success, and his demonstrations of his own process were received with enthusiasm. We had intended to give a full report of the lecture in this issue, but it contains so much important matter that we have decided to print it in full, commencing in the February number; and, meanwhile, reproduce the following brief report which appeared in the *Public Ledger*, viz. :

Mr. Frederick E. Ives lectured at the Franklin Institute last evening upon "Photography in the Colors of Nature," making an important contribution to the history and science of that interesting subject. He stated that there are two distinct kinds of processes by which attempts have been made to reproduce the natural colors in a photographic picture, the first kind simple and direct, and the second kind complicated and indirect. The first originated in the discovery by Seebeck, of Jena, in 1810, that chloride of silver, after preliminary exposure to white light, is colored a brick red by prolonged exposure to the red end of the spectrum and a metallic blue by the blue ends. Great hopes had been entertained that some modification of this process would solve the problem; but after eighty years, Mr. Ives pointed out, the best results obtained in this way were nothing more than scientific curiosities. Various authorities were cited to show that all apparent progress along that line has been a delusion, and that there is no scientific basis for a belief that such a process will ever succeed. Mr. Ives showed several specimens of the work in this line recently produced by Veress, of Hungary, the colors being very faint, and but remotely corresponding to the originals from which the photographs were made.

The second kind of process, Mr. Ives went on to say, is termed "composite heliochromy," and was proposed by Henry Collen, Queen Victoria's painting master, in 1865. Collen's idea was to make a separate photographic negative and color print from each primary color, and then superimpose the transparent color-print so as to form one, which should reproduce the light and shade and colors of the object photographed. Collen's idea, though a most ingenious one, did not solve the problem, because it was based upon a false theory of color, and there were then no known means for carrying it out; but his plan had been gradually improved upon, chiefly through the inves-

tigations of Duhauron and Cros, of Paris; Vogel and Stolze, of Berlin, and by Mr. Ives himself, until it was actually capable of producing the coveted results, and by means simple enough to be practicable. Mr. Ives's process, though, in a general way, similar to those of Colléan, Duhauron, Cros, and Stolze, was the only one in accord with the modern color-theory, now thought to be fully established, and differed from all the others in such important particulars that the United States Patent Office had recognized it as an original invention, and had granted him exclusive right to operate it. Although the process was too complicated and costly to be available in the same way as ordinary photography, it could certainly be profitably employed for the illustration of popular lectures, so that the general public might at least enjoy a limited realization of its desire for "photography in the natural colors."

In connection with his lecture Mr. Ives demonstrated the complete success of his experiments in this line, and showed some remarkable specimens of photography in the colors of nature. In addition to a specimen prepared for projection by means of the triple lantern, he showed a successful method of applying the principle to the production of permanent pictures,—his specimens including not only a landscape view, but a photo-micrograph of a mineral as it appears under polarized light, and a copy of a high-class chromo, in all of which the most delicate gradations of color were reproduced.

Dr. Charles L. Mitchell, one of the active members of the Photographic Society of Philadelphia, has several treats in store for the society in the lantern exhibitions, which he has promised to give this season, of his summer's work abroad. Dr. Mitchell carried a camera and six or eight hundred films through Germany, Switzerland, and Northern Italy, and, since his return home, has turned those films into a collection of negatives of which he has every reason to be proud: The series of views which he has secured are in many respects unique, and many of them are of points which, as far as we know, have never been photographed. This is the case particularly with respect to Switzerland, and his intelligent use of orthochromatic plates, etc., or color screen, has preserved beauties which would otherwise have been lost. The first exhibition is fixed for Thursday, January 8, 1891, at the Franklin Institute, when the subject will be "Southern Germany and Tyrol." During the coming winter illustrated talks are promised by Dr. A. Graham Reed, upon "Norway," and by Mr. John Carbutt, upon his summer's trip abroad.—*Public Ledger*.

THE DIAZOTYPE PROCESSES.

PERHAPS it is hardly recognized as yet what a considerable influence the diazotype processes may have upon photography with the lapse of time. They give a power of obtaining color in direct photographic prints never before seen, and, in cases in which the particular developer chances not to be costly, they are usually rather inexpensive to work.

They naturally divide themselves into two great classes: in the one class positive prints are produced from negatives; in the other positive prints are produced from positives.

The first of these classes—in which positive prints of colors varying according to the mode of preparation of the sensitive surface—is a printing-out system which was discovered by Dr. Adolf Feer, of Lorrach, and its principle, according to Dr. Vogel, is that "a positive paper picture can be obtained from a photographic negative with every diazo compound capable of forming a sulpho-acid, if brought together with sulphite of soda into aqueous solution. If paper be impregnated with this, adding at the same time an amine or phenol, and the dried papers be exposed to light, the sulpho-acids will return to their original compounds—free, simple, diazo compounds and sulphite of soda. The free diazo compounds form now with the amine or phenol present the desired azo color. These pictures possess one defect: they are more on the inside of the paper than upon the surface, the solution applied having to be alkaline, and alkali attacks the size of the paper, thus allowing the penetrating of the liquid." Dr. Witt states that the azo bodies are capable of producing about two thousand coloring agents, from which we deduce that the proportion thereof likely to be utilizable in photographic work will probably form a wide field for photographic research.

As regards the second of the classes, that discovered by Messrs. Green, Cross, and Bevan, about which much has been published in these pages, the color obtained is likely to vary with every new developer as it is discovered; moreover, the operator is not limited to primuline as a starting point. Then, again,

what are called "developers" in this process are not developers in the full sense of the term, for the images are previously visible, and what are now called "developers" produce the colors by chemical reaction. Should substances be found which will develop upon diazotized bodies photographic images previously invisible, another large field for photographic research will be opened.

According to Dr. Witt, the colors produced by these processes can be generally designated as "fast." We suppose dyers call certain colors fast because they will not move. Messrs. Green, Cross, and Bevan have found that some of the colors produced are so stable that the fabrics dyed by them will bear boiling in soap and water without fading. The influence of light upon them may be different, but such a great number of coloring compounds is obtainable by the process that, with time and experience, it will be possible to separate the stable from the unstable.

Just at the time when these remarkable methods of producing positives from positives have been born into the world comes the discovery of Colonel Waterhouse of a method of rapidly producing direct positives in the camera, and with short exposures. Some of his results were exhibited at the last meeting of the Photographic Society, and from among them a selection might have been made which would have answered well if employed to give diazotype pictures by direct printing.

The uses of azo compounds in orthochromatic photography have yet to be unveiled, but several good experimenters, who are also investigators, are engaged in the research.

These facts tend to show that fields of photographic research which it will take years to explore have just been opened.—*Photographic (London) News*, Dec. 5, 1890.

A Correction.—In our reprint of Mr. W. Bloxham's excellent paper on "A Systematic Method of Copying Engravings," November, 1890, p. 335, credit was given to the *Optical Journal*; it should read *The Optical Magic Lantern Journal*. We are at a loss on whom to lay the blame for this error,—whether the intelligent compositor or the proof-reader.

REVERSALS OF NEGATIVES IN DEVELOPMENT.

THERE is apparently some confusion created by a looseness of language which exists regarding the reversal of negatives, and it seems that a few cautions are necessary in the matter before conclusions are jumped to. We have quite recently, through Colonel Waterhouse, had a most interesting addition to our knowledge of development phenomena in the addition of carbamides to the developer, and it has been assumed in some quarters that this has a direct bearing on the reversal of the photographic image by light. The two species of reversal must be treated as distinct actions, and the theories which are applicable to the one cannot with any force be held to apply to the other. The action of the carbamides is apparently to form a positive image on a plate which would, with the ordinary developer, give a negative image. The same action takes place when a strongish solution of hyposulphite of soda is added to the ferrous oxalate developer, and it is to be presumed, but must not by any means be taken for granted, that its cause is the same in these two instances.

If we adopt the chemical theory of the action of light on a haloid salt, we have two chemical actions at work,—one a reducing action, by which the bromide, if that be the haloid salt of silver used, is partially reduced to the state of sub-bromide, and the other a destruction of the developing power of this sub-bromide by what is practically an oxidizing action. In the case of ordinary negatives there is no doubt that the first action has alone to be taken into serious account; for though the two actions are at work simultaneously, yet the second action is at least sixty times slower than the first, until the film is exhausted, so to speak, by the reducing action. In considering, then, the conversion of what should be a negative into a positive, only the reducing action of light need be considered. In the process of development the infinitesimal portion of silver bromide is first reduced,

and, as the writer believes, more sub-bromide is at once created by the combination between the metallic silver and the adjacent unaltered bromide, which is in its turn reduced, and so on, till an image is built up, its final density being dependent on the amount of silver bromide available. Now, what happens when a carbamide is added to, say, an eikonogen developer is this: a negative image begins to appear, but finally apparently disappears, and a positive image comes out by continuing the development. Evidently, then, the negative image at first starts is desirous of asserting itself, but the carbamide prevents further action, and only development takes place where the negative image has not been brought out. This appears to be due to the fact that in the presence of the carbamide the sub-bromide is less easily reduced than the bromide itself. This is a matter of some difficulty to understand except under one of two conditions, as the work done in reducing the bromide—that is, splitting off two atoms of bromide—must be greater than that where only one has to be set free. If, however, the sub-bromide can combine with carbamide, either as a lake or chemically, then, no doubt, it is possible that the sub-bromide would act as it does when it takes up oxygen, and refuse to develop, and then the whole energy of the developer would be expended in reducing the bromide with which no such combination had taken place. Another possible explanation would be the solubility of the bromide in the carbamide. Suppose it be soluble, then as fast the carbamide dissolved the bromide the developer would reduce the dissolved silver salt *in situ*. This seems to be the reason of the development reversal of the image when any large quantity of hyposulphite is used with the ferrous oxalate. There may seem to be reasons against the explanation offered of this last reaction, as hyposulphite does not appear to be so efficacious with pyrogallol and ammonia as it is with the iron developer. This, however, is not to be wondered at, as there seems but little doubt that this latter developer, with a small quantity of hyposulphite, is excessively powerful, and if its energy is equal to the work of instantaneously reducing the dissolved silver, the positive image would be obtained. The pyro developer is certainly less energetic, and the dissolved silver salt

would be more slowly reduced, and have time to be transported to those parts of the image which had already begun to develop, and to annex themselves to it. We have several instances of this before us, where, during development, a drop of hypo has fallen on the plate when the developer was pyro, the consequence has been a less dense image at that part, whilst where a ferrous oxalate developer was employed the effect has been to produce a black blotch reducing the unexposed bromide.

The production of positives, then, by the addition of carbamide to the developer is wholly a chemical phenomenon, whilst that by light is what we may call a physical one. It may be well to recall the most ancient method of producing a positive in the camera. A plate is coated with iodide of silver by the old wet-plate process, and is exposed to the light for a short time. It is then washed and immersed in a weak solution of potassium iodide, washed again, and exposed in the camera for longer than would be required if a negative picture were to be made. The plate is then dipped in the silver nitrate bath and the ordinary developer applied. The resulting picture is a positive, and can be made very perfect if care be taken in the manipulations and the applications of the different baths. In this case we have the original sub-iodide of silver produced by the preliminary exposure rendered undevelopable by contact with potassium iodide. The exposure to light of this new compound liberates iodine from the potassium iodide, and causes the sub-iodide to once more become the undevelopable iodide. The silver bath then removes the iodide of potassium from the remaining sub-iodide, and leaves it once more capable of development, with the result that a positive is produced; the sub-iodide of the preliminary exposure being destroyed by the second exposure. The difference between this method of producing positives and that with the carbamide is very marked; the one is due to action outside the developer, the other is due to the action of the developer itself.—W. DE W. ABNEY, *in Photography*.

EDITORIAL.

OUR enterprising contemporary *Outing*, which has lately made photography quite an important feature of the magazine, in the December number publishes an illustrated paper on "Flash-Light Photography" by Mr. W. I. Lincoln Adams. The paper, which is without any special merit, in addition to being somewhat loosely written, is embellished with process cuts of four flash-light negatives, which with a single exception are decidedly mediocral. This exception is a flower subject, which originally appeared in the paper over which Mr. Adams is supposed to exercise control. At the time when it was first published, in commenting on the picture (AMERICAN JOUR. OF PHOTO., Vol. XI., p. 148), while we praised the picture, we called attention to the fact that the flower represented was not at all what it was claimed to be, viz., "A Night-blooming Cereus," but merely an every-day sort of Cactus, stuck in among a lot of commonplace ferns; further, that the only photograph which has been made in this country of a Night-blooming Cereus, were the efforts of the present editor of the AMERICAN JOUR. OF PHOTO.,—in which the growth of plant life was shown photographically within spaces of a few seconds of time,¹—a discovery which was republished in almost every language of Continental Europe.

Notwithstanding our kindly admonition, Mr. Adams, who is a young man in journalism as well as years, not knowing or ignoring the fact that there is a certain amount of courtesy due others of the craft, continues to ignore the credit due us, and trots out his Cactus as a Cereus. We should have left the matter pass unnoticed, had he not quoted Mr. B. Grant's letter in connection with his photographic fraud. This communication from the Island of St. Helena to the *Photographic News* of London was published May 10, 1889, long before the negative reproduced in Mr. Adams' paper was thought of. For the instruction of our youthful competitor we here republish the letter in full; it speaks for itself.

"In your issues of 14th and 28th December, 1888, I read with much interest the articles by Julius F. Sachse, on the 'Evolution of the Night-Blooming Cereus.' As there is a similar plant growing profusely in St. Helena at 'The Briars Village,' where I reside, 'Waldivia' and

¹The Evolution of the Cereus. AMERICAN JOURNAL OF PHOTOGRAPHY, 1888, Vol. IX., p. 289.

'Cambrian Cottage,' at the head of Jamestown, and here and there on the arid hillsides, and this (January and February) being the time of year it bears flowers, I availed myself of the opportunity to try a few plates, and met with, I consider, fair success, considering the dull state of the weather at the time. As to the merits or demerits of the photographs sent herewith I leave you to judge, merely stating that I am an amateur of three years' standing, and have gained what little knowledge I possess of photography by reading and working unassisted. My object in photographing these beautiful flowers, and the vine which produces them, was to give you and others who have not had the pleasure (good fortune I may say) of seeing them, a better idea of the buds, etc., than could be realized from photographs taken at twilight or 'flash light.' That the Cereus growing here is the same genus as that of which so excellent a description has been given in your esteemed paper, the photographs (6) sent, I opine, will prove. The only exception is, the vine is much broader than a man's finger—about three inches—and is three-cornered. 'It was imported here, I believe, from Madagascar, and is locally 'cactus,' and 'Madagascar Creeper,' but the botanical name is *Cereus triangularis*. The bud, in its first appearance, is about as large as a seed of Indian corn, which it resembles both in colour and shape, and sixteen or eighteen days elapse before it opens. The flower comes out in full bloom after night-fall, and remains so until the sun's rays fall upon it (between nine and ten next morning), when it shrinks and dies, sometimes leaving a fruit the shape of a pine-apple, which is edible, but I have not tasted it. Those who have eaten it say that it is very good, but has a faint taste. It is really a magnificent sight to see fifty or sixty of these elegant flowers in full bloom on a moonlight night, when they emit a powerfully fragrant odor, similar to that emitted by the flowers of the honeysuckle; while on dark nights they are scentless. This shows that the moon has great influence on the flowers, causing them to give forth a delightful perfume. Mr. Sachse's description of the flower answers exactly to that growing on the Island. I need not enter into details here further than to state that when in full bloom it measures over eighteen inches in circumference. I measured a flower at midnight on 2d inst. The vine is eaten greedily by sheep and goats when accessible to them, and is propagated as easily as the prickly pear (*Opuntia vulgaris*, a cactus) over which it trails."—*Photographic (London) News*, May 10, 1889, Vol. XXXIII., p. 306.

THE AMATEUR PHOTOGRAPHIC SOCIETY
OF BALTIMORE.

THE regular meeting of the society was held at the rooms on Friday, Nov. 21st, the president, Isaac T. Norris in the chair.

The committee on lantern slides reported that they had about one hundred, and expected to have fully thirty more within the course of about two weeks, and action could then be taken as to the next exhibition, as with one hundred and thirty assurances there would be no trouble to make the requisite number needed, viz., one hundred and fifty. The committee on "Illustrated Baltimore" reported that progress was being made, and that they now had in hand quite a number of negatives on which they would soon start to make slides.

Quite a long discussion was entered into regarding a series of lectures to take place during the winter on subjects photographic, for the entertainment and improvement of the membership. Several eminent persons were mentioned who would favor the society with lectures; amongst others, Professors Rowland, Wilson, and Smith, Dr. Onderdonk and Howard Jefferson, the latter on photo-mechanical processes. These latter, together with such slides as had been engaged, it was the sense of the meeting would fill up the place of the slides of the interchange, which it was decided to dispense with this season, owing to the fact that our society was not ready to hand in to the interchange a sufficient number of slides, as also owing to the fact that from a monetary view it was not deemed advisable to join the interchange this season.

WE call attention to our new literary department, "In the Twilight Hour," and trust that now and then there may be found a sentiment or line of cheer for every one, no matter what his taste or disposition.

We also wish to call the attention of our readers to the importance of sending in their subscriptions for 1891 without delay. As many of our embellishments are, as heretofore, silver prints, it is imperative that we should know the number needed, as our edition already requires us to start preparations two months in advance of the date of issue. Our pictures for the coming year will cover a wide range of subjects, and we shall endeavor to make them all gems of the photographic art, which will alone be worth the price of the subscription.

GENERAL NOTES.

THE Albany Camera Club has taken a long step forward, and now has its home in new quarters at the corner of Steuben and North Pearl Streets. Judging from the description we are inclined to believe the claim of Albany amateur photographers, that their new home is one of the model club houses in the country. The progressive members of the Camera Club have transformed the place into a comfortable, useful and artistic suite of rooms. The principal room, or club parlor, facing North Pearl street, is a photographer's paradise. The walls are covered with a paper of a pretty design, and the woodwork has been softened to bright and harmonious hues beneath the painters' brushes.

At the east end of the room is a brass-mounted curtain pole, behind which the wall of the room has been left pure and spotless to receive the lantern pictures at the club exhibitions. Forty handsome antique oak chairs, tables and a book case furnish the room, and the wall is an amateur art gallery of photography. Black marble mantels give room for bric-a-brac and decoration, and two clusters of six incandescent lamps furnish an abundance of illumination.

Just off the main parlor is a reading room. A table contains the latest magazines and periodicals.

The east room of the suite is used as a members' coat room, etc. In it are a number of roomy lockers in which the apparatus and chemicals of the photographers can be safely stored. A white space is also left on the north wall of this room, which is to be used in testing new lantern slides. A peculiar machine rests on the top of the row of lockers. It is made for reducing negatives so that they may be of a regulation size in order to be used in lantern slide exhibitions.

The pride of the club in their new quarters, however, is their dark room, which they claim is the best in the city, if not in this State. It has no doors entering it immediately, but from the rear room of the suite a door opens into a dark passage. Along this you pass and, turning a corner, find yourself in a room, dead black. This is equipped with everything that can be useful to the photographer in developing his plates. It is large and roomy and perfectly ventilated. Four men can work in it at one time. It, too, is lighted by electricity. The window is fitted with a red slide to be used daytimes.

Taken all through the Camera Club's new rooms are a compliment to its energy and enterprise. The membership of the club now consists of active, associate, and non-resident. During the first week of the

new year the house-warming for amateur photographers and special friends of the club will be held. At this event there will be a lantern slide exhibition, a collation, and a hearty good time.

Professor Holden gives an interesting account of the photographic apparatus and the work done in astronomical photography at the Lick Observatory. He states that the negatives taken there bear easily an enlargement of 570 diameters, and even double that amount. From an examination of the best pictures yet taken at the observatory Professor Holden finds that parallel walls on the moon's surface, whose tops are no more than 200 yards or so in width, and which are not more than 1,000 or 1,200 yards apart, are plainly visible. There is no doubt that enlarged photographs are capable of affording more information regarding the moon's surface than can be gained by years of diligent observation, and when the larger lenses now found necessary are brought into use, marvellous strides in this direction may be looked for. We expect in the near future to be able to present our readers, through the JOURNAL, with a specimen print from Professor Holden's negatives.

Some Facts about Eggs.—A British contemporary states that one frequently sees an announcement of the extraordinary number of eggs imported into England within a given period. It would be very interesting to know the proportion of them that are used for industrial purposes. It must, however, be very large indeed. Eggs are extensively used in many manufactures beyond that of photographic paper. The wholesale egg merchants in England now break eggs and sell the whites and yolks separately at so much per gallon. The largest consumers of the whites, in London, are those who albumenize paper. The yolks are principally used in dressing of kid leather for gloves and similar uses, and not, as some imagine, by the pastry cooks. By thus dividing the eggs, the merchants are enabled to supply both the albumen and the yolks at a much lower price than either could be obtained for if the eggs had to be purchased elsewhere.

In France the following statistics which have been collected for the French Department of Agriculture, show that the income derived by French people who rear fowls, according to octroi and market returns, is 337,100,000 francs, of which 153,500,000 francs represent the value of the flesh and 183,900,000 francs that of the eggs. The quantity sold in poultry yards is immense, as is also the number used in the homes of those who rear fowls. These figures do not find their way into statistics. Owing to the fact that by the new tariff the 15,000,-

000 to 16,000,000 dozen eggs which have been heretofore sent to the United States from Canada, are now shut out of this country and sent to England, the editor of the AMERICAN JOURNAL OF PHOTOGRAPHY, a short time ago, made an effort to obtain some statistics from the United States Department of Agriculture at Washington relating to the egg industry of this country, but the effort proved futile.—S.

The annual exhibition of the work of the members of the Photographic Society of Philadelphia has just been opened at the society's rooms, and will continue open until the January meeting, when the votes will be counted and the "honor pictures" selected. During the week of January 5-10 the room of the society will be open daily from 2 to 6 P.M., in order that the pictures may be inspected by the friends of the members.

A Curious Photograph.—Freaks or sports in nature are not uncommon, and at the present day announcements of new *lusus naturæ* have ceased to startle the community, and we thought we were prepared for reports of almost anything—scientific or photographic,—but when we were told of a Kodak Jr. (4x5) which had turned out a twin picture, we at once became a doubting Thomas. We wanted to see the film and print. Well, both materialized, and it is certainly a photographic curiosity; the picture measures 4x8 inches, and was taken with a Kodak Jr. by Mr. Albert H. Postel, of Philadelphia, while in California. The view was taken from a carriage while in motion in the children's playground in Golden Gate Park. The two views were taken immediately after one another, and are so closely joined that it gives the appearance of one plate. Mr. Postel during his western trip took many views, but we believe this was the only "twin;" in fact, we think it is the only case on record.

Arrangements have been perfected by which our readers can obtain the AMERICAN JOURNAL OF PHOTOGRAPHY together with the *American Amateur Photographer* at the low rate of \$3.00 for both magazines. This liberal offer places the two magazines within the reach of every photographer, professional as well as amateur, and will give them two of the best photographic monthlies at a cost only slightly in excess of the regular rate of either singly. To those of our readers who are not acquainted with the *American Amateur Photographer* we need only say that it fills the same field in amateur photography as we strive to in the general or professional field. Subscriptions may be sent to either magazine.

METHODS OF TONING BROMIDE PRINTS BROWN.

FINE browns may be obtained on bromide paper by proceeding as follows, *after fixing*:

A.—Potassium ferricyanide	100 grs.
Water	24 ozs.
B.—Uranium nitrate	100 grs.
Water	24 ozs.

These solutions will keep separately, but must be mixed only for immediate use. Take equal parts of A and B, and immerse the print therein until it begins to turn. Then immerse in a weak solution of common alum, wash thoroughly, and then immerse for five minutes in a fresh fixing bath:

Hyposulphite soda	3 ozs.
Water	16 "

Wash thoroughly. As this process intensifies the print, medium light prints give the best results. After fixing tone in the following way. The prints should be very much over-printed, and then soaked in following bath till *desired* tone is obtained:

Platinum perchloride	8 grs.
Distilled water	30 ozs.
Hydrochloric acid	½ oz.

And then wash and dry. Sepia brown and warm tones can be obtained on Eastman paper by using following formula for developing. Both solutions to be used cold:

1.—Potassium oxalate	1 lb.
Distilled water	48 ozs.
2.—Protosulphate of iron	960 grs. (2 ozs., troy).
Citric acid	100 "
Bromide of ammonium	80 "
Add distilled water to make . . .	8 fluid ounces.

To get the warm sepia tones the first essential is a perfect negative, full-timed, and strong without chalky contrasts, and the second is about fifty per cent. longer exposure in the printing frame, adding three-quarters of an ounce, or even one ounce, of water to the potassium oxalate solution.

After fixing and well washing, immerse in a mixture of bichromate of potash one part, hydrochloric acid three parts, water 150 parts. When bleached wash thoroughly, and develop with dilute ferrous oxalate in ordinary daylight, or with the following developer:

1.—Citric acid	120 grs.
Ammon. carb.	88 "
Water	1 oz.
2.—Sulphate of iron	140 grs.
Sulphuric acid	1 drop.
Water	1 oz.

To three parts of No. 1 add one part of No. 2. This will give a reddish or pink-colored image, which may be toned in any of the ordinary toning baths, or with one of the sulphocyanide baths, the following being good :

Chloride of gold	1 gr.
Acetate of soda	25 grs.
Sulphocyanide of ammonium	3 "
Water	1 oz.

After toning, the print should be fixed and washed afresh.

By treating the developed, fixed and washed print with a solution of Schleepe's salt of strength one to fifty of water, to which a drop or two of ammonia has been added, a rich, warm brown can be obtained on either of the papers mentioned. Another method is to bleach, and re-develop as follows: The print, after fixing and washing, is placed in either of the following baths: (a) Sat. sol. cupric sulphate mixed with sat. sol. calcium chloride, and filtering off the calcium sulphate; or (b) sat. sol. mercuric chloride; or (c) potass. bichromate one part, hydrochloric acid three parts, distilled water 150 parts. But after using this, and washing thoroughly, alum should be used to remove the chromate. After thoroughly washing again expose to light, and develop with a very weak ferrous oxalate developer, or with diluted quinol and carbonate of ammonia. The resulting image should be more or less warm, and can be toned with either of the following baths:

1.—Acetate of soda	3 grammes.
Chloride of lime	2 "
Chloride of gold	1 "
Hot water	500 cc.

Add the gold after the other salts are dissolved, and allow to stand three hours before using.

2.—Acetate of soda	30 grammes.
Sulphocyanide of ammonia	4 "
Chloride of gold	1 "
Distilled water	500 cc.

SOLUTION 1.

3.—Chloride of gold	1 grammie.
Distilled water	500 cc.

SOLUTION II.

Ammonium sulphocyanide	30 grammes.
Ammonium carbonate	25 "
Distilled water	500 cc.

Mix one part of I. with three of II., and dilute with equal quantity of water for warm browns.—*Photography.*

Developing Enlargements on Bromide Paper.—Dr. Miethé, in one of the recent numbers of his journal, gives an extensive and excellent description of the enlarging process with bromide papers. In order to obtain a purely black tone, he recommends a ferrous oxalate developer of the following composition :

SOLUTION A.

Sulphate of iron	100 grammes.
Water	350 to 400 c.c.
Tartaric acid	3 grammes.

SOLUTION B.

Potassium oxalate	300 grammes.
Water	1200 c.c.

Just before use are mixed

Solution B	100 c.c.
Solution A	25 c.c.
Old developing solution	20 to 60 c.c.

If the print comes out rapidly the solution should always be diluted with an old developer, never with water, the latter tending to produce greenish flat prints. Dr. Witt recommends for the same purpose the following eikonogen developer :

SOLUTION A.

Eikonogen	8 grammes.
Bisulphate lye	10 c.c.
Sodium sulphite	10 grammes.
Water	400 c.c.

SOLUTION B.

Potassium carbonate	35 grammes.
Water	400 grammes.

Solutions A and B are mixed in equal parts.—*Photographisches Wochenblatt.*

Developing Transparencies.—Captain Pizzighelli gives the following formula of a developer for transparencies: A, Dissolve 39 grammes of citric acid in 135 c.c. of water, and neutralize with aqueous ammonia. Should too much ammonia be used, it must be removed with the aid of heat. Then add 26 grammes of citric acid, and the solution is diluted so as to make 270 c.c. B, Solution of ferrous sulphate, 1.3, slightly acidified with sulphuric acid to prevent its oxidation. C, Solution of chloride of sodium, 1.30. To develop, take A, 10 parts; B, 5 parts; C, 1 part. Chloride of sodium is a powerful restrainer, and should be used with care. Sulphate of iron in a larger proportion than that indicated retards development. By diluting the developer we obtain prints that are soft and of less intensity. Gallic acid as an accelerator. It produces sepia tones. To the above solution we may add two and a half parts of a solution of gallic acid at one per cent. By this process we are certain to produce excellent transparencies.

A New Retouching Fluid.—F. L. Stuber, the well-known photographer of South Bethlehem, Pa., sends us the following formula, to supersede all retouching varnishes and other compounds used to give a biting surface for the pencil; a further advantage is that you can work all over the negative; viz.: Make an albumen solution same as in by-gone days—the white of one egg to ten ounces of distilled water,—beat the egg to a froth—let it settle, then add the water, filter, shake, and add a few drops of ammonia, so that it will keep. After the negative is washed flow it with the albumen solution and let it dry. Mr. Stuber adds,—Then take your pencil and see what a fine surface you have.

In spectroscopic astronomy the eye has been superseded of late to a great extent by the photographic plate, which is now able to recognize fainter impressions than the eye, and to register them permanently. The instrument employed is a photographic telescope, with a prism, or series of prisms, in front of the object-glass, the whole mounted like any large telescope, and provided with an accurate driving clock. It has thus become possible to complete in a comparatively short time a general survey of the spectra of all the brighter stars of the northern hemisphere, and the survey is now being extended to the southern hemisphere, where it is already well advanced.

Where is Stanley's "Darkest Africa" and Booth's "Darkest England" alongside of the amateur photographer's "Darkest Dark Room"?

A fact worth noting in photography has just been recorded. It appears that one of the essentials to a good photograph is a clean face,—not a relatively, but an absolutely clean one,—and it is said that photographers have much trouble because they do not like to make a suggestion which might be resented by their sitters.

An Idol Shattered.—A young girl of the Art Students' League, who looks upon man as a great mistake, had until recently the most complete collection of photographs of Mary Anderson in the country; in fact, she owned every kind of a photograph that our Mary ever had taken. Miss Anderson was her idol; but when she heard of her approaching marriage the idol was shattered, and all the photographs were auctioned off by her with scorn in the class-room. She is now making a collection of Julia Marlowe's photographs, and should she marry this young woman's faith in her own sex will be gone forever.
—*The Epoch.*

Mr. Sudden is a photographer at Jefferson City, Mo., who makes a specialty of instantaneous pictures.

She Wanted Photographic Proofs.—A certain good-hearted and unsophisticated servant girl of this city admired some "proofs" of her mistress' portrait sent home by a photographer, and was told what studio they came from.

"I select the one I like the best from these 'proofs,'" the lady remarked, "and then order the pictures finished."

A day or two later the girl appeared at the photographer's.

"I want to see some 'proofs,'" she said to the clerk in charge.

"When did you sit for them?" she was asked.

"Sure," was the reply, "I don't know anything about that. Mrs. Blank told me I could come here and pick out a 'proof' to suit and then have the pictures made."

She was assured that they did not keep a supply of stock proofs to fit all faces, and consented to sit before the camera. The photographer, to get her in the right pose, said, as he put his head under the cloth: "Look over in that corner, please." His astonishment can be imagined when the sitter, calmly getting up out of the chair and walking to the designated corner, innocently asked: "And what do you want me to see, sir?"—*Brockton Enterprise.*

M. Morey has succeeded in photographing the movements of an animal under water. If he will explain how he did it, a listening world will applaud.

In the Twilight Hour.

WHAT help is a comrade's bugle blast
When the peril of Alpine heights is past?
What need the spurring paean roll
When the runner is safe beyond the goal?
Nay, if thou hast a word of cheer,
Speak it while I am alive to hear.

—*Margaret J. Preston.*

TRIFLES are the hinges of Destiny.

GRUMBLERS never work, and workers
never grumble.—*Dr. Williams.*

HUMILITY is of all graces the chief when
it does not know itself to be a grace.

THE pyramids will pass away, but the
slaves who built them will live forever.—*H. A. Boardman.*

IF the stream at which you wish to drink
is muddy, go higher! The fountain is
clear.—*Gail Hamilton.*

LIVE and act to-day. He who spends
one-half of his time in enjoying his to-mor-
row will spend the other half in regretting
his yesterdays.—*W. P. Breed.*

IRON becomes magnetized by the magnet
against which it grinds, and the soul be-
comes assimilated to that on which it
thinks continually.—*A. J. Gordon.*

IT is hard sometimes to speak a kind
word to others when the shadows rest on
your own heart, but nothing will tend more
to lighten our own cares than the effort to
help another.

PROVIDENCE throws about us an intricate network of circumstances, influences,
and responsibilities from which we cannot
honorably escape, and before we are ready
to begin the survey of life's pathway it is
already marked out for us; aye, and foot-
worn in some directions we never meant to
follow.—*Ellen Oliver.*

TRUE happiness never flows into a man,
but always out of him. Hence heaven is
sometimes found in cottages and hell in
palaces. Heaven itself is more internal
than external.—*J. P. Newman.*

THE responsibilities of life are gauged
not by what we are, but by what we may
become. The man who has ventured only
to the limits of his conscious force has only
reached the threshold of his possible attain-
ments.—*F. G. Clark.*

THE beautiful in our homes and schools
and sanctuaries is also the useful. It is
the smile upon the face of the hard ex-
periences of the world, the music that
comes from heaven amid the discords of
human life.—*W. F. Bainbridge.*

I DO wish that all tired people did but
know the infinite rest there is in fencing off
the six days from the seventh—in anchoring
the business ships of our daily life as
the Saturday draws to its close, leaving
them to ride peacefully upon the flow or
the ebb until Monday morning comes
again.—*Anna Warner.*

IT is not the situation which makes the
man, but the man who makes the situation.
A freeman may be in chains. A slave may
sit on a throne. He who fills the situation
exalts or debases it. Martyrs glorified the
scaffold. Christ transformed the cross from
a gibbet into the most glorious symbol of
the ages.—*F. W. Robertson.*

KEEP clear of personalities in conversa-
tion. Small minds occupy themselves with
persons. When you must talk of persons,
dwell on the good side. There are family
boards where continual criticism and cut-
ting up of characters go on, but it is not a
pleasant thing to a kind heart. One does
not like to dine off a dissecting table.

—*John Hall.*

Queries and Answers.

WE have received numerous requests from various parts of the country to add a department of "Queries and Answers" to the AMERICAL JOURNAL OF PHOTOGRAPHY. We have heretofore hesitated to do so, as in most papers the "queries and answers" are not *bona fide*, but merely cooked up for the occasion. Consequently we have personally answered most inquiries. But these have lately increased to so great an extent that it has become a considerable task to answer all promptly. At the same time, there are hardly enough to insure the success of the department, month after month. We will, however, say that as soon as enough anxious inquirers present themselves we will give the department our personal attention. In the meantime, the management has placed it under Mr. Snapp-schotte, late of the Leopardville Camera Club, who, during this interim, will conduct the department somewhat after the manner of our esteemed contemporaries on both sides of the water.

Macfarland.—No; photographic paper is floated on a silver bath, and not on the street, nor is it negotiable in your sense. It cannot be floated on the market, nor salted down as collateral.

Seraphia de Chocolat.—The prints sent us are perfect in all the details, and give evidence of great proficiency in the future. To remedy the indistinctness which you write about, we would suggest that in the future you reduce the time of exposure a trifle,—say to about one-quarter of the time you gave in the negative sent us. It will be apt to bring out more contrast.

Stoffel Kansnicht, Pumpernickel, Pa.—Nein, mein Herr; wir Können Keine Pennsylvanische Deutsche auflage des AMERIKANISCHEN JOURNAL DER PHOTOGRAFIE, herausgeben besser lernen sie unsere landesprache, so dass sie den JOURNAL in seiner original form Verstchen Können.

Angelina Slim.—We will state that photographic developers are not intended to be used as a specific for muscular development. We would suggest Indian clubs and dumb-bells, with plenty of fresh air; or, better still, try amateur photography when the spring opens.

Hayseed, Jr., Waybacktown, Mo.—We cannot advise you what outfit to buy. It is not our custom to advertise any goods in this column; therefore consult our advertising columns. But if you are unable to make a selection, and a hint from us would prove acceptable, and we know of what we speak, do not purchase an outfit until you have seen the great Pinchbek Eagle Eye.

Frank W.—n, Camden, N. J.—Photographs are not printed on a printing press, but are printed on sensitized paper by the action of light. Consult W. E. Ketcham's instructions how to become a photographer.

Joseph —.—You are both wrong. The term over-exposure, if used photographically, means too much time. Editorially, it means too little drapery upon the subject.

West Pine Street.—The term silver bath alludes to a solution of nitrate of silver used to sensitize photographic paper. There is no similarity whatever between a photographer's silver bath and Mrs. Langtry's silver bath-tub.

Button-Presser.—We agree with you. It is disheartening to know that after you have made your hundred exposures all right according to instructions, that when you send your films to the photographer for development, and, after waiting a month, you receive only half a dozen perfect prints. Of course the developer fiend blames it on the amateur. The only remedy is to learn to develop your own films, and then get a proper camera and outfit.

Literary and Business Notes.

J. P. ANDREWS, so well-known in the photographic trade in connection with Samuel C. Partridge, is now connected with the house of Hirsh, Kahn & Co., of 333 Kearney Street, San Francisco.

THE notice from the New York Camera Club, in relation to the Exhibition of Modern Mechanical Photographic Process, unfortunately reached us too late for insertion in our November Journal. However, we are glad to report that the exhibition was successful in every particular.

CARBON PRINTING, Max Bölte, No. 33 of Anthony's Photographic Series, containing explicit instructions for professional and amateur photographers who wish to look up on this process. This work fills a long felt want in photographic literature. The title fully explains the contents; every process in carbon printing is touched upon; not the least valuable is the close of the tenth chapter, which treats of all possible failures, giving their causes as a guide to the operation for the future. We commend the work to our readers. It is from the hand of one well versed in the practical workings of this branch of the photographic art.

The American Annual of Photography and Photographic Times Almanac for 1891. Scovill & Adams Co., New York. The first of the annuals to reach us. It is more voluminous than its predecessor, and contains upwards of one hundred articles, with thirty-six full pages of illustrations, mostly made by the Ives process. As the contributors include so many well-known photographic students, it is hard to single out any special article, unless the exception is made in favor of the illustrated paper on the "Portraits of Daguerre," by C. W. Canfield, which is a valuable addition to photographic literature. It is a matter of regret that the copy sent us of this otherwise excellent book is so poorly bound as to make it almost valueless as a book of reference, which it should be to every photographer.

BIBLIOTHECA POLYTECHNICA: A Directory of Technical Literature. A classified catalogue of all books, annuals and journals published in America, England, France and Germany, including their relation to legislation, hygiene, and daily life. Edited by Fritz von Szczepanski. First Annual Issue. Crown 8vo., cloth. New York: The International News Company, 83 & 85 Duane Street. 75 cents.

We greet, with much pleasure, this new international index to the progress of technical science. It has been compiled with astonishing industry, and is a complete book of references for all publications of a technical nature. The catch-words are given in three languages,—English, French, and German—so that readers of every nationality can at once turn to the branch they seek in the literature of the latest investigations. An exhaustive enumeration of the technical journals in the three great languages of the world is also given.

SOUVENIR ALBUM OF DOVER, FOXCROFT, AND SEBEC LAKE, MAINE.—P. F. Pollard, the publisher, is the well-known photographer of Union Square in Dover, Maine. The souvenir is well gotten up and illustrates, by the photo-lithographic process, the various public buildings of Dover and Foxcroft, with the wild and romantic "bits" around Sebec Lake. Chisholm Brothers, of Portland, Maine, did the mechanical work, which reflects credit on all concerned.

THE *Connecticut Guardsman*, a monthly magazine, published in Waterbury, Conn., and devoted to matters military, athletic, of art and the stage, has introduced a department of amateur photography, which is conducted by our friend, Mr. C. R. Pancoast. That it will be conducted in an impartial manner, and that the editor will always be ready and willing to impart advice, and answer queries, is a foregone conclusion. It will be strange, judging from what we know of Mr. Pancoast, if he does not turn many of the button-pressers of the Nutmeg State into picture makers in fact.

PHOTOGRAPHIC PATENTS.

THE following list of patents relating to the photographic interests is specially reported by Franklin H. Hough, Solicitor of American and Foreign Patents, 915 F Street, N. W., Washington, D. C., who will furnish copies of patents for 25 cents each.

ISSUE OF DECEMBER 2D, 1890.

441,704—Panoramic Camera ; G. G. Rockwood, New York, N. Y., and H. B. Shallenberger, Rochester, N. Y.

441,831—Photographic Film ; George Eastman, Rochester, N. Y.

ISSUE OF DECEMBER 9TH, 1890.

442,216—Photographic Camera ; F. A. Brownell, assignor to Eastman Company, Rochester, N. Y.

442,251—Photographic Objective ; G. Gundlach, Rochester, N. Y.

442,224—Photographing and other purposes, Apparatus for producing Flash-Lights for ; A. Hamsley, Philadelphia, Pa.

442,250—Photography, Making Iron Prints by ; C. R. McBlair, Washington, D. C., assignor to M. W. Offutt, Towsontown, Md.

ISSUE OF DECEMBER 16TH, 1890.

442,616—Camera ; C. O. Ellison, Christopher, Ohio ; Liverpool, England.

ISSUE OF DECEMBER 30TH, 1890.

443,610—Camera Apparatus, Slide and Extension Hood ; H. Bode, New York City, N. Y.

443,762—Photographer's Background ; E. H. Hague, Jackson, Mich.

443,555—Photographic Camera Attachment ; C. C. Polk, assignor of one half to C. B. Thornburg, Richmond, Ind.

A Munich photographer has given to the public copies of a hitherto unknown portrait of Beethoven. It represents the master in a standing posture, holding his pen, whilst in the act of looking over some music. The head is somewhat smaller and less pronounced than one has seen it in other paintings, but the expression of the features is most characteristic and fine.

